

STATUS OF THE CANAL

WORK ALREADY ACCOMPLISHED ON THE PANAMA ROUTE.

Report of Gen H. L. Abbot, U. S. A., on Conditions as He Found Them During the Years 1896-98.

WHAT THE OLD COMPANY DID

VAST AMOUNT OF ACTUAL CONSTRUCTION WAS COMPLETED.

Data Secured for Successful Carrying on of the Enterprise—Statistics and Requirements of Project.

WHEN, in 1896, the New Panama Canal Company rose, phoenix-like, from the wreck of the De Lesseps enterprise, it succeeded not only to valuable franchises and concessions, but to a vast amount of work already accomplished; to a colossal aggregation of plant and appliances for the carrying on to completion of the work, and the most essential requirement of all—a broader knowledge of the needs and possibilities incident to the work at hand than the old company had possessed.

When the new company put its force of 4,000 men at work it found two-fifths of the entire canal work actually completed, according to the estimates of its own engineers. Of the 45.5 miles the portions adjacent to the sea at both ends had been excavated, and on the higher levels beyond the twenty-eighth mile from the Atlantic a large amount of work had been done. At Culebra, the highest point on the canal, the cut was carried, by Dec. 1 of that year, to a depth of 164 feet. The expenditures of the old company, as compiled from the report of the receivers, were \$156,400,000, and of this sum the cost of excavation and embankments was \$88,600,000.

On the second point—that of facilities for carrying on the work—it is not necessary to go to the report of the receivers, nor yet to the prospectus of the new Panama Canal Company, issued on Dec. 26, 1898. Richard Harding Davis, in his "Three Gringos in Venezuela and Central America," declared that the pathos of the situation was not that the works were rotting and the machinery rusting, but that each and every bit of the appliances for carrying on the work was kept as if on exhibition, in complete readiness for an army of workmen to take hold and push the work to completion.

Regarding the third point, the company stated in its own behalf:

"At the present time (December of 1898) the topography of all the grounds involved in the project, and the character of the materials to be encountered, are actually known and delineated; deep and extensive excavations, as well as numerous soundings and borings have made known the subterranean strata underlying the surface, and by those means no doubt is left of the soundness of the materials through which the canal is to be dug to great depths, and on which the foundations of the locks, dams and other structures are to be established."

One of the first acts of the new company was to appoint a commission composed of the most eminent engineers in the world, and for nearly two years this body of experts went over the ground, investigating every phase of the situation, while the company went about with such work as might be done without waiting for their report.

Third in the list of these men was Brigadier General Henry L. Abbot, corps of engineers, U. S. A., retired, who signed the report of the commission, and later summarized its findings in an article published in the Engineering News on Oct. 6, 1898. The article sets forth the exact status of the canal at that time, and comparatively little has been done since then, except to keep the works in order and to prevent, so far as possible, the deterioration of the plant, it is reproduced here as being a concise description of the property to which, in all probability, the United States will succeed. It also sets forth briefly a comparative statement of the merits and demerits of the Panama and Nicaragua routes.

STATISTICS OF CANAL WORK.

Comparison with Other Similar Enterprises—Work of Old Company.

After the failure of the old Panama Canal Company, in February, 1898, the property passed into the hands of a receiver, who, seeking to save from ruin the vast number of subscribers of moderate means, referred the technical problems to a "Comité d'Etudes" selected from amongst the best engineers of France. In May, 1899, this commission made an able report, indicating the numerous points which demanded further investigation before final plans could be judiciously adopted, but suggesting the general features of such a plan, based on a study of all existing data. To make these further investigations a new company was organized in October, 1899, and since that date it has quietly prosecuted its labors and has now collected all the information needed to command the confidence of engineers in its definite project. It is to set forth this project, and to indicate its superiority to anything possible in Nicaragua, that the present article is written. It may be proper to add that the writer, as a member of a technical commission of engineers, made last spring a careful examination of the entire route of the Panama canal, and is thus possessed of definite personal information, in some degree assisted by having formerly traversed Nicaragua. The following are the essential features of this project, indorsed, with some possible future modifications in details, by a committee technique, containing French, English, German, Russian and American engineers, among them the chief engineers of the Manchester and of the Kiel ship

laborers which will be required on any isthmian canal. These reasons certainly demand that the comparative merits of this route should be considered before adopting another location for the canal now generally believed to be essential to meet the needs of our Atlantic and Pacific coasts.

NICARAGUAN CONDITIONS.

In Nicaragua the general conditions are distinctly inferior. Two ports must be artificially prepared; at least of great practical difficulty, since nature has already closed the harbor. About 120 miles of railroad must be built, mostly traversing a wilderness. Almost nothing has been done in the way of construction or of preparation for the work. Of the whole length of 176 miles, sixty-eight miles follow the bed of a crooked river, where the prevailing trade winds and the currents resulting from the whole outlet of Lake Nicaragua will unite to aggravate the difficulty of shipping in transit. The length of the route is about four times that of the Panama canal, adding proportionately to the time of passage; finally, at least one dam is demanded, quite without precedent in our canal construction, besides several miles of huge embankments in the San Francisco basin, where the foundations are extremely bad, and where a rupture at any future time would entail veritable disasters.

But passing from generalities, the details of the Panama project will first be considered.

The Canal Proper.—The total length is

and is now and will continue to be in an industrial clay schist, requiring blasting, and passing to veritable rock. Serious trouble need no longer be apprehended here. This problem has been studied most thoroughly by the new company—involving the removal of about two million cubic meters of material, the sinking of many pits and borings, and the construction at the worst point of a tunnel 210 meters long (689 feet) at a level of forty-one meters (134 feet). In locating the line of the canal, great care has been taken to avoid abrupt curves. A minimum radius of 2,500 meters (8,200 feet) is adopted for the central cut, and 3,000 meters (9,840 feet) for the rest of the line, except near Bohio, where radii of 2,500 meters and 2,000 meters (8,200 feet) occur in enlargements having a bottom width of sixty-two meters (203 feet) and near Obispo, where one radius of 1,700 meters (5,576 feet) occurs with a bottom width of eighty meters (262 feet). Even with the large standard curves adopted, suitable enlargements will be provided to render the route perfect in this important detail, in respect to which it is more favored by nature than either Kiel or Manchester.

CROSS SECTIONS.

The cross-section to be given the canal varies in different localities, as shown in the following table: The depth is uniform—five meters (16 feet), and the side slopes usually three base to two height in earth, and two base to three height in rocky cuts. In respect to berms and revetments, the latest practice, as recommended

SENATOR JOHN T. MORGAN



Senator Morgan has long been noted for his strenuous advocacy of a canal connecting the Gulf of Mexico with the Pacific ocean. He holds out for the Nicaraguan route, and threatens to block the Panama project if he can find a way.

seventy-five kilometers (46.5 miles), of which five (3.1 miles) lie in the Bay of Panama, between Isla Naos and La Boca. Of the seventy kilometers (43.4 miles) of inland construction, twenty-four kilometers (14.8 miles) on the Atlantic side (between Colon and Bohio) and seven kilometers (4.3 miles) on the Pacific side (between La Boca and Miraflores) will be at the sea level, and of this distance about twenty-five kilometers (15.5 miles) are now essentially excavated; thus there remains only thirty-eight kilometers (23.5 miles) to be traversed by the aid of locks; and here also so much actual work has been done that no visitor can pass over the line without appreciating that the canal can no longer be regarded as an experiment.

Of these thirty-eight kilometers between Bohio and Miraflores, the first twenty-two (13.6 miles) extending from Bohio to Obispo, will traverse a vast lake 5,500 hectares (13,585 acres) in extent, created in the valley of the Chagres by a dam at Bohio. Its level above the sea will range between a minimum of sixteen meters (52 feet) and a maximum of twenty meters (65 feet), and the normal level being seventeen meters (55 feet). A reservoir of 150 million cubic meters (32,950 million cubic feet) is thus provided to control in part the floods of the river. Access to the lake will be furnished by two double locks at Bohio.

There thus will remain to be considered only the sixteen kilometers (ten miles) lying between Obispo, where the canal leaves the Chagres river and Miraflores, where sea-level is reached. This section includes the continental divide at the Culebra, approached on the side of the Atlantic by the valley of the Obispo, a tributary of the Chagres, and on the Pacific by the valley of the Rio Grande. The great economic problem to solve has been to determine the most advantageous level for the bottom of the canal between these two points, with a view to afford the best balance between the cost and the time of constructing the locks and dams on the one hand and deep cutting on the other.

TO REGULATE FLOODS.

This problem, with its adjuncts of how to best supply the summit level during the dry season, and how to regulate the floods of the Chagres during the rainy season, and how to provide hydraulic power for lighting and operating the canal at all seasons, has been most thoroughly studied on the spot by the new company since its organization in 1894. Space is lacking to detail the trivial excavations, aggregating three millions cubic meters, the surveys, the borings, the gaugings of the water courses and the many other details which have been investigated in the most elaborate manner. Suffice it to say that, after comparative estimates of sixteen projects, the committee technique has advised the adoption of a level of 20.75 meters (sixty-eight feet) above mean tide, which, should experience in the active prosecution of the work render it expedient, will admit of modification, either by adding two more locks, raising the level of the cut to 20.5 meters (ninety-seven feet), or of suppressing one or perhaps two locks, and thus reducing it to ten meters (thirty-three feet).

This definite plan, placing the bottom of the canal at a level of 20.75 meters, involves two double locks at Obispo, raising the water surface at the summit level to a maximum of 21.25 meters (69 feet); one double lock at Fariaño dropping these levels to 22.5 meters (73 feet); and two double locks at Pedro Miguel, dropping them to 6.25 meters (20 feet) and 5.5 meters (18 feet); and a tidal lock at Miraflores, where the water level varies between three meters, or ten feet, above, and three meters below mean tide. (On the Atlantic side the tidal oscillation is only a few inches, and no such provision is needed.) The length of these levels in every case exceeds two kilometers (1.2 miles), thus avoiding trouble from oscillations due to lockages. In reference to the deep cutting at Culebra—the bugbear of former days—it is only useful to say that the excavation has already been carried below the level of the soft upper strata, which gives so much trouble by sliding,

by the recent International Congress of Engineers at Brussels, will be followed.

	Earth.	Rocky cuts.
Colon to Bohio.....	49.5	20
Lake Bohio (minimum).....	57.15	50
Summit level.....	37.5	36
Fariaño to Pedro Miguel.....	49.5	20
Pedro Miguel to Miraflores.....	49.5	20
Miraflores to La Boca.....	49.5	20
Bay of Panama (tide).....	63.0	50

*Low tide.

Enlargements 600 meters (1,968 feet) long and sixty meters (196 feet) wide at bottom, to enable vessels to pass each other, will be provided in the canal at intervals of about eight kilometers (4.9 miles); but immediately above and below the locks these dimensions will be raised to 700 meters (2,296 feet), and sixty-two meters (203 feet). The locks.—The locks, all founded on rock, are to be double, the larger chamber having a serviceable length of 225 meters (739 feet) at the head, and a depth of 9.5 meters (31 feet) at the sides, and ten meters (32 feet) at the middle. The smaller chamber has the same serviceable length, with intermediate gates to reduce it to 130 meters (426 feet) when desired; a width of eighteen meters (59 feet); and the same depth as the other. The larger will be constructed first, together with the foundations and head of the smaller, thus permitting the latter to be completed after opening the canal to traffic. The maximum lift has been fixed at nine meters (29 feet), except at Bohio, where provisions for ten meters (32 feet) will be made, for use during extreme floods of the Chagres, which last only for a few hours.

The gate will be pivoted single leaf type, and water will be supplied by pipes buried in the lock floors and delivering on each side and throughout the whole length of the chamber, the flow being regulated by valves of the low level cylindrical pattern. Entrance to the chambers from either direction will be facilitated by crib piers, sixty meters long, with detached heads to protect the structure against shocks.

GREAT BOHIO DAM.

The dam at Bohio will be of earth, abutting on conglomerate rock at the sides, and founded on compact bed of clay, believed to be diluvial. The length of the crest will be 362 meters (1,187 feet); the extreme height above the bed of the river, twenty-three meters (75 feet), and above the foundation 28.5 meters (93 feet). The width at the crest will rise three meters (ten feet) above the highest level of the lake, will be fifteen meters (49 feet), the upstream slope has a height of one on a base of three, with four berms each three meters (ten feet) wide, the whole riveted with stone laid dry; the downstream slope has a height of two on a base of three, with one berm three meters wide, and is supported by a mass of loose rock rising to a sufficient height to protect the dam if, in spite of all precautions, it should chance to be overtopped by a sudden flood during construction. A puddled core, and a concrete wall at the upper toe, will cut off any possible leakage. The mass of the dam will be of excellent materials found in the close vicinity. During construction the river will be diverted through the rock cut for the locks, with ample provisions for reservoirs for combating larger floods. All the details have been carefully studied, and the project has received the unanimous approval of the committee technique.

The dam at Alajuela will be of concrete masonry founded on and abutting against compact rock. The length of crest will be 28.5 meters (93 feet); and the height forty-one meters (134 feet) above the bed of the river and fifty meters (164 feet) above the deepest part of the rock foundation.

The cross-section conforms to the conditions of recent engineering practice.

To facilitate construction, a tunnel 300 meters (984 feet) long and seventy-five square meters (807 square feet) in cross-section will be driven through the ridge to a head of the river below, and a temporary dam will divert into it the minor flood discharges of the river. To meet the case of larger floods, the dam will be raised alternately on the two sides, thus allowing space for a portion to be overthrown without interrupting the work. These details have been carefully studied, and meet the approval of the committee technique.

Engineers will recognize the immense advantages possessed by the Panama route, in the matter of dam construction, over the conditions found at Nicaragua, where the diversion of the San Juan river is admitted to be impracticable, and where the foundations present extraordinary difficulties and demand an unusual structure quite without precedent for canal purposes.

Regulation of the Chagres River.—This subject, comprising the control of the floods and the supply of the summit level, has received the elaborate investigation demanded by its importance. Space is lacking for details, but the general features are the following:

CHAGRES RIVER LEVELS.

At Alajuela the low water surface of the river is twenty-eight meters (91.84 feet) above sea level; at Gamboa, fourteen meters (forty-six feet), and at Bohio, fourteen meters. The mean annual discharges at these three points respectively are: three cubic meters (2,324 cubic feet), eighty-four cubic meters (2,395 cubic feet), and 121 cubic meters (4,281 cubic feet) per second. During the three low water months (February, March and April) these mean volumes fall to twenty-seven cubic meters (953 cubic feet), thirty-one cubic meters (1,094 cubic feet), and thirty-nine cubic meters (1,376 cubic feet), the minimum being at Gamboa (23 cubic feet), ten cubic meters (353 cubic feet), and fourteen cubic meters (490 cubic feet). The maximum flood volumes closely estimated on the basis of the floods of 1879, the largest within the memory of the inhabitants, is at Gamboa, 2,940 cubic meters (57,530 cubic feet) per second, and at Bohio 3,100 cubic meters (68,410 cubic feet). The floods of the river, great and small, are all of the torrential type, resulting from heavy and widespread tempests of the rainy season. Their duration is extremely short, rarely exceeding in the greatest floods forty-eight hours at Gamboa and ninety-six hours at Bohio. The maximum heights ever attained above the low water stage are about eleven meters (36.1 feet) at Gamboa, and twelve meters (39.3 feet) at Bohio. These figures, resulting from the study of the water level observations, have furnished the basis for solving the two great questions of river regulation presented by the problem of the canal.

Upon an estimate, known to be safe, of allowing 1,000 cubic meters (35,300 cubic feet) per second to freely pass Gamboa and 1,200 cubic meters (42,300 cubic feet) to freely pass Bohio, reserving to contain 100 million cubic meters (3,530,000 cubic feet) above Alajuela, and 150 million cubic meters (5,295,000 cubic feet) above Bohio are floods; and these are provided by the dams already described. In no other than the flood of 1879 would so large volumes be demanded.

The volume of these lakes to be regulated by overflow weirs of the Stoney type, which have given perfect satisfaction on the Manchester canal, and which have the great merit of allowing the sills to be placed below the water surface without serious leakage.

The volume of 1,000 cubic meters (35,300 cubic feet) per second permitted to pass Gamboa will fall to the bed of the Chagres at Lake Bohio. The volume of 1,200 cubic meters (42,300 cubic feet) allowed to escape from the latter, will pass by two overflow weirs—one to the left of the canal, discharging 500 cubic meters (17,650 cubic feet) per second through the bed of the Chagres and its derivation, and the other at the sources of Rio Gigante, discharging 700 cubic meters (24,740 cubic feet) by a route also separated from the canal.

DRY SEASON NEEDS.

To supply the summit level during the season of low water, the inflow of twenty cubic meters (706 cubic feet) per second will be required. To provide 7,000 horsepower for lighting the canal and operating the gates, fifteen cubic meters (530 cubic feet) per second are demanded, falling thirty-two meters (105 feet) at Alajuela, and sixteen meters (52 feet) at Bohio, and acting on turbines driving dynamos to transmit the power in the form of electricity. The reservoir capacity, in excess of the low water flow of the Chagres, to supply these two needs, is 130 million cubic meters (4,589 million cubic feet). The area of the lake above Alajuela is 2,900 hectares (7,250 acres) at the level of sixty-one meters (199 feet) above the bed of the river (7,500 acres) at the level of sixty-five meters (213 feet), the crest being sixty-nine meters (226 feet), calling for a layer of water nine meters (29 feet) deep to contain 100 million cubic meters for flood storage and 130 million for low water supply. Upon this basis the capacity of the lake has been regulated.

To transport the needful volume of water (twenty cubic meters per second) from Alajuela to the summit level, a feeder sixteen kilometers (ten miles) long will leave the lake at a level of fifty-eight meters (193 feet) above tide, and follow the left bank to a lateral valley, discharging gently into the summit level about a kilometer (0.62 miles) from the locks at Obispo. The feeder will be a canal, with a bottom level of sixteen meters (52 feet), and the cross-section is established to carry from twenty-five (82) to forty cubic meters (1,412 cubic feet) per second, with a view to meeting all possible contingencies of a largely increased traffic. At these heights water will flow into the canal even if the higher summit level should finally be found to be so important a work that the relative merits of the two routes will be examined and judged by a commission of expert engineers, for it is certain that only one canal is now needed, and that that one should be the best possible.

In Benjamin's Own Town.

Philadelphia Record.

Beyond the sea he goes, beyond the sea
Does he look back to Arctura and me?
And yet, how could it be?
How should he look back with such a maid as I?
Ah, let him go—good-bye!

Beyond my sight he goes, beyond my sight.
Does he look back and say, "My sweet, good-bye!"
And yet, how could it be?
How should he look back with such a maid as I?
Ah, let him go—good-bye!

Beyond my prayer he goes, beyond my prayer.
Does he look back from out the great world
And yet, how could it be?
How should he look back with such a maid as I?
Ah, let him go—good-bye!

—Josephine Daskam.

The Penitent Girl.

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gravated by the necessity of placing the overflow weirs near Ochoa, at a distance of more than 100 kilometers (sixty-two miles) from the lake.

In this connection it may be noted that in the matter of rainfall the Panama canal is the more fortunate. All the difficult excavations and works of construction, except those near Bohio, lie in the interior where the annual downfall, as determined by thirty-two years of observation, is thirty-three inches, or only about 50 per cent. more than on our Gulf coast, while in Nicaragua, the most difficult constructions, including the Ochoa dam and in the San Francisco embankments, lie a district where the downfall, as determined from the data collected by the Nicaragua Canal Company (about seven years' observations), is 256 inches, or nearly three times as much.

Estimates.—This subject has received the most careful study, both in determining quantities and unit prices. Much valuable data as to the latter, based on actual experience on the isthmus, has been available. The cost of each different project, and there have been sixteen different variants, has been estimated in detail, and a selection between them has thus been reached intelligently. The sum needed for the work of construction proper is, in round numbers, \$100,000,000. The element of time is more difficult to determine, but the volume remaining to be excavated at the Culebra being a little less than twelve million cubic meters (35,000,000 cubic yards), it is believed that ten years is a conservative estimate.

NICARAGUAN DEMERITS.

The Nicaragua Canal.—To the general relative merits of the two canals already considered may be added that the Panama route lies in the interior of Colombia, while that by Nicaragua lies near the Costa Rican boundary, where hostilities are liable at any time to cause difficulties, as they already have done during the canal examination by the Walker commission last spring. Also that in respect to danger from possible earthquakes, which might easily cause trouble at the great locks, Panama is by far the more safe, because no active volcano is found within a distance of at least 200 miles from it, while three lie in the close vicinity of the route of the Nicaragua canal, some within only forty miles of its western locks. Last April an earthquake destroyed substantial masonry buildings at Leon, only 100 miles distant from these lock sites.

But while it is thus easy to compare the two canals in their general features, and to see that the route by Panama is much superior to that by Nicaragua, when details are considered, we are confronted by the fact that really no definite project can be claimed for the latter. The company's project, as revised by the government commission, of which General Ludlow was president, is shown on the accompanying drawing, which may be compared with that given to illustrate the Panama project, but it should be noted that the latter has double the horizontal scale, thus falling to impress the eye by 50 per cent., with its relative merit in respect to length. The data upon which this project was based were so unsatisfactory that the Ludlow commission necessary data for the formation of a final project, eighteen months' time, covering two dry seasons, and an expenditure of \$50,000, will be required. A new commission has been appointed, and new surveys inaugurated, and it appears from the views of the individual members, as given before the select committee of the Senate in June, 1898, that the changes undergoing study are radical in their nature, and that, although some at least of the engineering difficulties which impressed the former government commission as insuperable, have not been avoided, they have yet been discovered. Under these conditions it is apparent that confidence cannot be accorded to such a project, and that really there is only one canal, that of Panama, whose construction could be judiciously undertaken at the present time. It is to be hoped before the government embarks on so important a work that the relative merits of the two routes will be examined and judged by a commission of expert engineers, for it is certain that only one canal is now needed, and that that one should be the best possible.

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AN OLD INDIANA TOWN

UTICA, ON THE OHIO RIVER, HAS AN INTERESTING HISTORY.

Known as the "Lime Center" of the United States—Indians Terrified the Early Settlers.

Correspondence of the Indianapolis Journal.

CHARLESTOWN, Ind., Nov. 20.—Six miles southeast of this place the old county-seat of Clark county, and eight miles above Jeffersonville, on the Ohio river, is situated the quaint old town of Utica, the lime center of the United States. The only settlers who came from the beautiful Mohawk valley, in western New York, from the vicinity of Utica, may possibly have had in mind as they floated down the Ohio from Pittsburgh the lines of the poet: "No pen-up Utica is destined our powers. But all the bounds universe are ours."

That is, they may have sung the above lines if not too busy flogging Indian arrows and bullets as they paddled downward toward the Falls of the Ohio.

From old-time records written by Samuel Morrison, who died at Indianapolis some twenty-five years ago, I am enabled to detail some interesting historical facts connected with early pioneer life in Clark county, Indiana, especially the vicinity of Utica. These old-time records are now in possession of Col. James M. Van Hook, of Charlestown, who has given much attention to securing from the misty past many authentic stories of pioneer life, and is, indeed, Clark county's antiquarian.

There were originally two settlements made, one between the cliffs and the Ohio river, by James Noble Wood, in 1795, and another in the same year on the north bank of the Ohio, opposite the mouth of Harrods creek, by James Ferguson, of Philadelphia. Dr. Bleigh, contracted with James Ferguson to build one hundred cabins of round logs, each with a cupboard and \$25 each. Samuel Morrison, from whose papers this sketch is compiled, arrived at Utica in September, 1817, finding all these cabins completed and some of them occupied. Mr. Morrison was Utica's first school teacher, and remained in the little town about seven years, picking up and stringing together much of its pioneer history.

In 1810 four additional families arrived at Utica from Philadelphia. Among them was Evan Thomas, a stone mason, who built the first three stone houses in the town. What Utica stone has since produced in the way of time and cement has been enormous. "U. T. K." lime is known in every State and Territory. The lime kilns and stone quarries are not reached by any line of railroad, but all shipments are made by stambord and the regulation line boat. Utica lime is often laughingly alluded to as the "poor man's paint." The colored brother who manipulates the whitewash brush is frequently called "the exterior decorator" when fees and outbiddings in spring take on a boat of dazzling whiteness, the result of his skill.

Late last month, Samuel Morrison's records told the following story, which the author had from the lips of old father John McClintock, in the early days of Utica:

In 1793 John McClintock and eight other men were bringing two large pirogues loaded with flour, bacon and whisky, the remnants of a party of fourteen men, from the mouth of the Ohio to the mouth of Harrods creek, fourteen miles above the Falls of the Ohio. When they were about half a mile above the mouth of the creek some animal of enormous size entered the river from the Kentucky shore. It threw the water so high that they could not see its shape or size, and it stirred up the mud from the very bottom of the river, making the stream so rough they had to land to keep from sinking. The animal went out into the mouth of Harrods creek, but just at that time the boatmen imagined they heard the yells of Indians, so they pushed out into the river for safety. Several of the men wanted to return and see the animal's tracks, but were refused permission by the captain, Constance McClintock. It was generally believed that the animal was a bear, and it is to this day that Captain McClintock and his men had witnessed the departure of the last mammoth.

John Lentz was the second merchant in Utica, and built the first steam grist mill. Samuel McClintock kept the first mill and tavern in the town. Judge Wood operated a ferry about Utica, and Judge Miller the ferry opposite the mouth of Harrods creek. Thomas Worrall, who lived on the Kentucky shore, just below the mouth of Harrods creek, also operated a ferry from that side of the river.

Battle creek, a swift stream which rushes into the Ohio at the foot of Twelve-mile island, was famed from the earliest days for its many sawmill conflicts between the red man and his pale-faced brother. It was a great crossing of emigrants from Kentucky to Indiana. Indiana lands were selling for \$1.25 per acre, and many Kentuckians took advantage of the low prices and found home, on Hoosier soil, in time.

Snake Attacks Auto Party.

New York Herald.

Mr. and Mrs. James Davidson and Mr. and Mrs. George W. Monson, of New York, who have been at their summer homes in Denville, N. J., on a hunting trip, had a battle with snakes yesterday morning at Min Hill while touring through German Valley and Newfoundland in an automobile.

The reptiles, two copperheads, were coiled up in the middle of the road ready to spring. The big automobile was by the gate when the snakes struck one of the snakes, killing it instantly. Snake No. 2 vanished. The driver, Mr. Davidson, could not tell where the thing had gone, so suddenly had been its disappearance. When the party reached the gate, a man called a railroad gatekeeper called to them that a snake was on the rear wheel and had curled itself around the axle. The machine was stopped and the snake stuck its head up in front of Mr. and Mrs. Monson, who were in the front seat.

Mrs. Monson screamed and jumped out of the automobile into a brook, sinking the gate. When Mrs. Monson was about to strike the reptile it suddenly opened its mouth and made a dash at her. She caught her in the shanty, when she got the door partly closed on its head. The men of the party killed the snake with their guns and threw it into the brook.

The snake was about three feet long. Riker, the gatekeeper, received \$15 for discovery of the snake, which might have done serious harm if it had not been detected in time.

Indians imagined they had settled on a soil not adapted to what growing, hence sold their holdings at a sacrifice in order to seek in the highlands, or knob country, which was a mistake. But they did discover that the highlands were admirably adapted to fruit culture, being above the line of late spring frosts, which nearly every time caught the fruit buds in the river lowlands.

One day a tall, lank Kentuckian of the corn-cracker variety, came to Thomas Worrall's to make some inquiries and to "see across the river." Day was just dawning, and the Kentuckian stood on the river shore for some time gazing with amazement on the towering cliffs and precipitous bluffs about Utica. Finally, turning to Worrall, the Kentuckian said: "Stranger, I won't go over there. I've looked over the d-d country at this distance, and I'm satisfied to stay on this side of the river. Them big hills and dark ravines are only fit places for thieves, Indians and wild varmints, and I won't risk my life among 'em," and turning on his heel he walked briskly away to his old Kentucky cabin.

A STRANGE SCALPING STORY.

From the valuable manuscript in possession of Colonel Van Hook is condensed the following remarkable story connected with the early history of Clarksville, now known as Ohio Falls:

In the spring of 1790 a family of the name of Smith emigrated from Pennsylvania and settled at Clarksville, with some half dozen other families, and a company of troops under the command of Capt. Robert George. They at once erected a stockade, keeping the families closely confined therein, as growing bands of Indians were very numerous. The water used in the stockade was brought from a spring nearly a quarter of a mile distant. The oldest daughter of Mrs. Nancy Smith, about twelve years of age, was sent one day to the spring for water. Just as she had filled her bucket she was fired upon by seven Indians who lay in ambush. The girl fell, and the savages ran to her and removed her scalp, but did not sink the tomahawk into her brain, as was their usual custom. The men in the stockade, hearing the firing, hurried to the spring, where they found the girl weltering in her blood, and, as they thought, dead. Closer investigation revealed the astonishing fact that she was still alive. She was able to describe the savages and how they looked. Seven bullets had passed through her body, but none had touched a vital spot.

Careful nursing enabled the girl to recover from her terrible injuries, though it was recorded as a miracle, and in a few months she was able to walk about the stockade again. And now comes the strange part of the story. The badly wounded scalp healed over, but instead of hair of the natural color the growth was of a snowy whiteness and as coarse as the hair of a horse's tail.

Miss Smith, at sixteen years of age, was united in marriage to a Mr. Fairchild, and herself and husband at an early day removed to Mississippi Territory and purchased the large island in the Mississippi river just above Natchez, which is known to this day as Fairchild's Island. Here they lived, prospered and reared a large family.

Mrs. Fairchild visited Utica for the last time in 1823, where her aged mother and her only sister, Mrs. James Noble Wood, then resided. She was then a hale and hearty matron, and conversed freely and intelligently of the early days of Clark's grant, of General George Rogers Clark, and his brother, General William Clark, who surveyed the grant and afterwards went on an exploring expedition to the mouth of the Columbia river in company with Meriwether Lewis, the travels of these pathfinders revealing the greatness and possibilities of the